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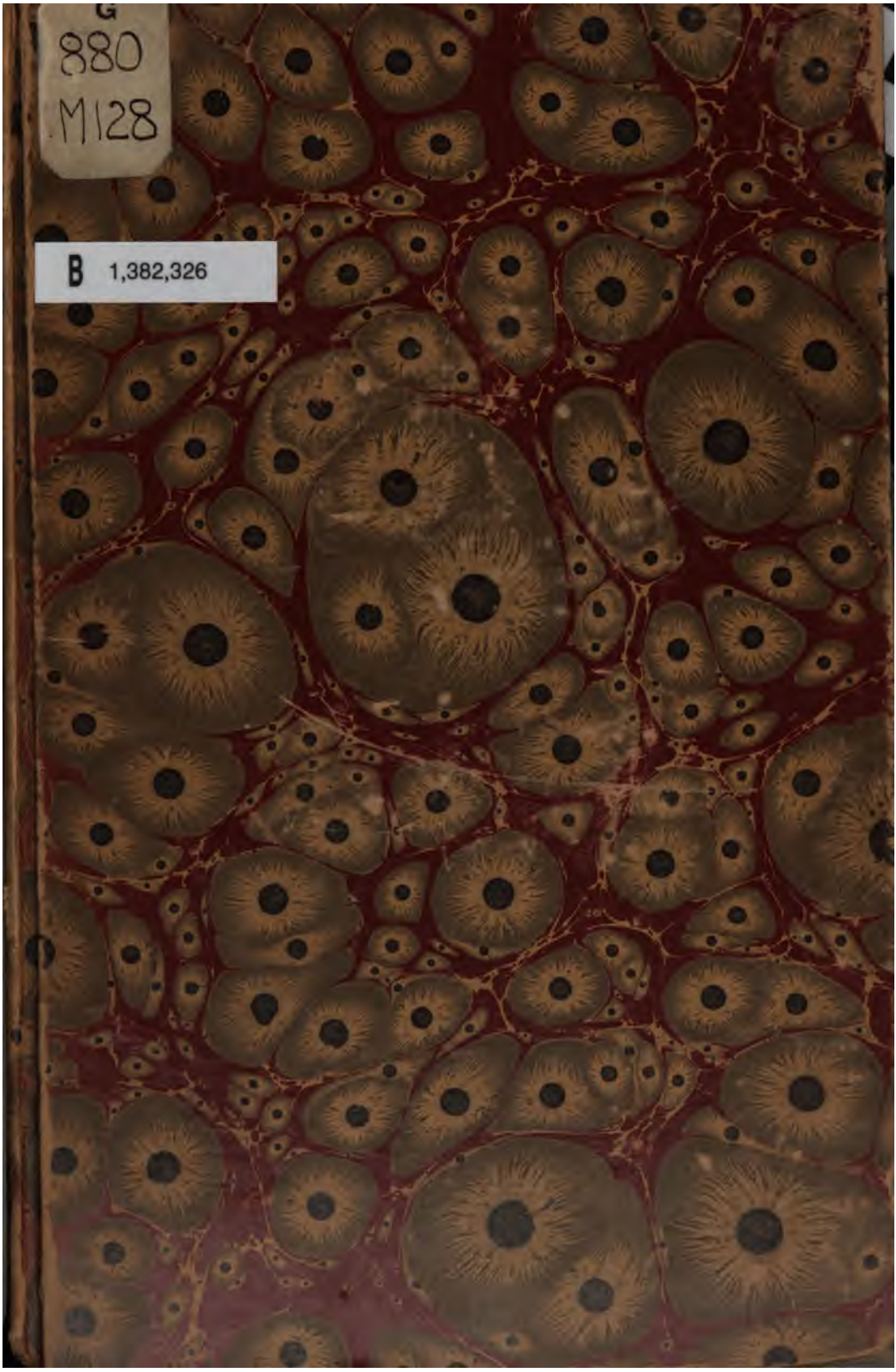

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THE THEORY

OF AN

ANTIPODAL SOUTHERN CONTINENT

DURING

THE SIXTEENTH CENTURY,

BY

JAMES R. McCLYMONT, M.A.

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PROCEEDINGS OF SECTIONS.

Section E.

THE INFLUENCE OF SPANISH AND PORTUGUESE DISCOVERIES DURING THE FIRST TWENTY YEARS OF THE SIXTEENTH CENTURY ON THE THEORY OF AN ANTIPODAL SOUTHERN CONTINENT.

Section E.

6.—THE INFLUENCE OF SPANISH AND PORTUGUESE DISCOVERIES DURING THE FIRST TWENTY YEARS OF THE SIXTEENTH CENTURY ON THE THEORY OF AN ANTIPODAL SOUTHERN CONTINENT.

By JAMES R. M'CLYMONT, M.A.

THE possibility of an antipodal continent follows from the sphericity of the earth, which has been generally admitted by geographers since the time of Aristotle. The older theory of the Hellenic Greeks regarded the earth as a disc surrounded by Ocean and floating in the midst of the heavens. All the seas had outlets into the ocean. In the east the river Phasis united the Euxine with the ocean, in the west the strait of the Columns of Hercules similarly connected the Mediterranean with it. The diameter of the earth was of twenty days' journey. The true successors of this Homeric school were the monastic illuminators of the middle ages. Their Imagines Mundi represent the earth as a wheel, the tire of which is the Homeric Ocean. It has three spokes, one of which is placed perpendicularly to the other two; the horizontal spokes represent the waters which were supposed to divide Europe and Africa from Asia, namely, the Tanais or River Don, the Black Sea, the Hellespont, the easternmost portion of the Mediterranean, and the Nile; the perpendicular spoke represents the remaining portion of the Mediterranean dividing Europe from Africa. The east, as the realm of Paradise, is placed at the summit of the wheel; Jerusalem is the nave, for "operatus es salutem in medio terrae" (Ps. 74, 12). The antipodal continent finds no place in the typical Imago Mundi, or, if alluded to at all, it is only to dismiss it as a fable: "Extra tres autem partes orbis pars trans oceanum ulterior est qui solis ardore incognita nobis est cuius finibus antipodes fabuloso inhabitare produntur." (*Orbis e codice taurinensi. Mappemonde dans un MS. qui contient un commentaire de l'Apocalypse.*) Atlas de Santarem.

The first terrestrial globe, so far as we know, was constructed about 150 B.C. by Crates of Mallus. Crates

divided the globe into four land segments, one of which represented all of the earth known to the ancients. The other three were conjectural. They were divided in one direction by an equatorial ocean, in the other by an ocean extending round the globe through the poles. The idea of Crates thus approaches the reality, with the exception of the equatorial ocean. It was perhaps based on the same supposed necessity of an equal distribution of land and water in order to maintain the equilibrium of the globe which influenced Mercator to postulate the existence of an antipodal continent. The device of Crates survives in the orb which forms one of the symbols of royalty at the coronation of our sovereigns.

Another element in the conception of a *Terra Australis* was added by Marinus of Tyre and Ptolemy of Alexandria. Eratosthenes (226 B.C.) had made the eastern coast of the African continent terminate in about 12° N. at the Land of Cinnamon, whence it was supposed oriental spices were brought. Hipparchus (160 B.C.) prolonged the coast indefinitely towards the south. But Marinus (about 100 A.D.), perhaps basing his representation on misunderstood reports of Greek travellers, diverted the African coast towards the east at about 15° 30′ S., and produced it to about the longitude of the Golden Chersonese, at which point he made it trend northwards to meet an extension of Asia, trending southwards immediately beyond the Magnus Sinus, or Gulf of Siam. The Indian Ocean thus became an inland sea. This scheme was not upset until the true form of Africa had been discovered, and even after that time it survived in many sixteenth-century maps in the eastern and isolated position which they gave to Zanzibar.

The theory of Marinus was adopted by Ptolemy (about 151 A.D.), whose great weight as an astronomer gave authority to all he promulgated. His astronomy, *ἡ σύνταξις μέγιστη*, was translated into Arabic in the caliphate of Mamun, 813–833, and was familiar to the Arabs under the name Almagest (*al μέγιστη*). But their geographical science owes more to an anonymous work supposed to date from the eighth century and to be of Greek origin, supplemented by information supplied by the Arabs themselves. This is the *Rasm al arsi*, or description of the earth. We have not sufficient data to enable us to judge whether the author of this work accepted the Greek or the Ptolemæan scheme of the southern hemisphere. Later Arab geographers combined

the two. The Tabula Rotunda in the Oxford MS. of Edrisi (1154) shows a round earth encircled by the Homeric Ocean and with the Ptolemæan extension of Africa; but the Indian Ocean is not surrounded by land, being connected with the outer Ocean towards the east at the fabulous country Uak-Uak, beyond the longitude of the Malay Peninsula.

The voyages of Marco Polo, 1268–1295, and the enterprises conducted under the patronage of Prince Henry of Portugal, 1418–1460, caused a revival of interest in the study of geography. The Geographia of Ptolemy was translated into Latin by Jacobo Angelo de Scarparia in 1409, and printed in 1475 at Vicenza, and in 1478 at Rome with illustrative maps designed by a certain Agathodaimon, who is said to have lived in the fifth century. From the time of its dissemination, from 1307 onwards, the Book of Marco Polo, dictated by that traveller when a prisoner in Genoa, had been the great work of reference on oriental geography as well as the favourite *thesaurus* of travel and adventure. It was originally edited in a somewhat barbarous French, by Rusticien de Pise, and from that edition, or from a revised version of it in purer French, several MS. translations were made into Italian and Latin in the course of the fourteenth century, and the work became widely known in the sixteenth century from the versions of Grynæus (1532) and Ramusio (1556). The earliest cartographer who shows marks of Polo's influence is Martin Behaim (1492), and thenceforward Polo's travels, with more or less understanding of their author, enter into the composition of the world-maps of the sixteenth century.

Polo, in his account of Java and Sumatra, adopts a phraseology of ancient date. Ptolemy applied the name Ἰαβαδιου to three islands. The term is a Greek form of the Sanskrit "Yavadvipa" or Isle of Barley, which is found in ancient inscriptions in the island of Java. The name may have passed through Arabic into Greek, and been conveyed by Greek travellers to Europe. The Sanskrit name of Sumatra was Prathama Yava, or the First Java, in allusion perhaps to its proximity to Asia. (*Jour. R. Asiat. Soc.*, Bombay, 1861, App. lxviii.) The Arab geographers also recognised more than one Java, and Ibn Batûta mentions one island "Jâwah" and another "Mul-Jâwah," or, "the original Java." As he calls the capital of a Mahometan State in the former island "Somothra," it is probable that his Jâwah was the island now called Sumatra, and his Mul-

Jâwah our modern Java. Polo describes one of the kingdoms of Javva la méneur under the name "Samara," but the name Sumatra as applied to the entire island does not appear on any European map with which I am acquainted until the year 1459, when Fra Mauro so denominates it on his Mappa Mundi. Fra Mauro's two Giavas, Giava maggiore and Giava menore, lie to the east of Asia, and the former seems to be identical with Cimpangu, or Japan.

In Polo's and in Varthema's times Java was regarded as an island of much greater extent than it really is. Marco Polo was informed that it was the largest island in the world, and gives its circumference as five thousand miles (*Le Livre de Marc Pol*, ed. Panthier, cap. clxii.), and that of Javva la méneur as two thousand. The companions of Varthema wished him to go and see "the largest island in the world," and having called at Bornei they took their way to the island called Giava. (Varthema, ed. Hakl. Soc., pp. 247–8.) In later times Java Minor was regarded as an island distinct both from Java and Sumatra. Thus Pigafetta (1522) says that at half a league from Java Major is the island of Bali, called also Java Minor. Another writer, Manoel Godinho de Heredia, who cites Polo, Varthema, Battista Agnese (1550?) and Petrus Plaucius (1598), places Java Minor in a new position altogether. Having described Sumatra, and Java under the name of Java Maior, and previously to describing Borneo, he mentions a Java Menor, and under that name describes the Javva la méneur of Polo. But his Java Menor is not in the position of Polo's Javva la méneur, but is in the Mar Austral in 24° S. lat. Its people possess many spices never seen in Europe, and are so ferocious that the inhabitants of the neighbouring islands hold no intercourse with them. (*Informaçao verdadeira da aurea Chersoneso*, Lisboa, 1807, p. 116.) The 163rd chapter of the Book of Marco Polo commences with the words "Quant on se part de Javva et on nage vii. c. milles contre midi adonc treuve l'en deux isles, l'une grant, et l'autre meneur. L'une a nom Sandur et l'autre Condur." Commentators until recently were unable to identify these islands, as well as the countries of Locach and Maliur and the island of Pontain and other places, the position of which depended on the direction to be taken from Java to Sandur and Condur. At last Marsden solved the difficulty by pointing out that if "Cyamba" were read in place of "Javva" and the southerly course for 700 miles were followed from

Cyamba, Condur or Pulo Condor would fall into its right position, Sandur would correspond with the Two Brothers, Locach with Lo-Kok, an ancient name for the lower part of the modern Siam, Pontain with Bintang, and Maliur with the Land of the Malays—the Malay Peninsula. But this emendation had not been thought of in the time of Mercator, who, in his desire to record all known discoveries, placed Sandur and Condur, Locach and Maliur where the MSS. of Marco Polo's travels indicated them, namely, to the south of Java, on or near a northern extension of the *Terra Australis*. Java Major on Mercator's map of the world of 1569 correctly represents the modern Java; Java Minor is an imaginary island situated in a gulf of the *Terra Australis*.

The next influence on the development of the conception of a *Terra Australis* was that exercised by the oceanic discoveries of the Spanish and Portuguese in South America in the end of the fifteenth and beginning of the sixteenth centuries. The necessity of discovering ocean routes to the east was the outcome of the aggressive attitude of the Turks and of the internecine rivalry of the maritime republics of Italy. As early as 1285 Genoa had sent out an expedition under the leadership of Tedisio Doria and Ugolino di Vivaldo for the purpose of discovering a path to the Indies by way of the south of Africa. The expedition never returned.

For nearly two centuries the more enterprising amongst the European nations of that period, by means of treaties with the Turks or of alliances with the Mongols, attempted to retain an interest in oriental trade. By the former means the Genoese retained their depôts in the Crimea for merchandise coming from the east by the overland route through Turkestan, and the French and Venetians came to an understanding with the Sultan of Egypt regarding the navigation of the Red Sea. Syria, under the power of the Crusaders, had become another mart for the oriental productions which came by the way of the Euphrates Valley, and the Venetians occupied a quarter in Ptolemais, and the Pisans one in Antioch, whilst the Genoese had counting-houses in Jerusalem, Joppa, and Cæsarea.

The inability of the European nations to support the Crusaders in their conquest necessitated the withdrawal of those merchants from Syria. The Genoese were compelled to retire in 1474 from the Crimea, whilst the Venetians so jealously conserved their rights in the route by the Red Sea

that other maritime nations had either to fall back upon the Genoese attempt of 1285, or strike out some entirely new enterprise in order to reach the east. The Portuguese did the former, and reached the east by the Cape of Good Hope in 1497, after a long series of fruitless efforts. The Spaniards did the latter, and in the attempt chanced to fall in with America on the way. The vast extension which Marco Polo's travels had given to Asia towards the east helped to implant in the mind of Columbus the idea of reaching it by sailing to the west, and the new world of Columbus was never more to him than the easternmost portion of the old. The subsequent discoveries of the Spaniards and Portuguese altered many of the Ptolemæan ideas about the configuration of the southern hemisphere. It was now seen that there was no eastward extension of the African continent; the Indian Ocean was not a *mare clausum;* Asia did not unite with an extended Africa; Ceylon was not of equal extent with the Indian Peninsula; Taprobana was removed from Ceylon to Sumatra; Catigara from the imaginary Southern Asia to Cape Comorin, and thence to unexplored Southern America.

Columbus and Bartholomew Diaz were the precursors of a host of Spanish and Portuguese discoverers. These nations were strong enough to keep the other maritime powers in check, and France in the early part of the sixteenth century had to content herself with stealthy expeditions undertaken by private individuals or syndicates, whilst England shortly began to play the part of the bold buccaneer. All charts and sailing directions were carefully conserved, and only general descriptive narratives were allowed to circulate outside of Spain or Portugal. "Manuel, King of Portugal," says Lelewel, "in his letter of 29th July, 1501, informed Ferdinand of the discovery of Brazil by Cabral, but he secreted all the nautical charts; they were deposited in the record office of the Admiralty, and could not be removed from the kingdom. All publicity was given to the glory and renown of the state and its navigators. Narratives of the voyages were scattered abroad in *brochures* and fly-leaves. People found in these the adventures of the travellers and everything that could astonish their minds, but they could find nothing there that would enable them to determine geographical positions with certainty. Charts were drawn which gave a picture of the discoveries, but they were destitute of every indication which could instruct

mariners regarding the dangers or the direction of the voyages." (*Geographie du Moyen Age*, ii., pp. 141–142.) The same remarks hold good of the policy of Spain, and only a few original records of her discoveries give details which could assist the curious to follow in the tracks of the discoverers.

Of such the best known instance is the account of the voyages of Vespucci. Two of these performed in the service of Spain and two in the service of Portugal were narrated by that voyager in a letter written, as appears from internal evidence, to Pier Soderini, the Gonfaloniere of Florence, and printed without a date, but probably in Florence in 1505. This epistle received widespread attention through being translated into Latin as an appendix to the popular *Cosmographiæ Introductio*, St. Dié, 1507. Humboldt and Varnhagen have done much to elucidate these voyages of Vespucci, and to restore the honour justly due to his name, but even they have been misled by their anxiety to identify too closely the landfalls and terminal points of his voyages, and have in several cases altered his plain statements of the latitudes observed. It is not to be wondered at, then, that the Spanish alguazil and author Enciso, writing in 1519 about a voyage performed in the service of Portugal, should have misunderstood its scope. Enciso is not reliable in matters beyond his personal cognisance, as Varnhagen has pointed out. (*Vespuce et son premier Voyage*, Paris, 1858, p. 25.) The former speaks thus vaguely of a discovery of land in 42° S.: "This Cape of Good Hope has to the west the land called austral; from the Cape of Good Hope to the "tierra austral" the distance is 450 leagues; it is in 42°; it is 600 leagues from Cape St. Augustine; it is S.E. ¼ S. from Cape St. Augustine. Nothing is known of this land except what has been seen from ships, for no one has landed on it." (*Suma de Geographia*, Seville, 1519, fol. liv., verso.) Mercator, quoting this passage of Enciso, places a *Promontorium Terræ Australis* on his *Magna Orbis Descriptio*, 1569, in 42° S. and about 15° of Boavista, and this cape came to be regarded by some geographers as an unassailably correct position. Jean Paulmier thus speaks of it in his *Mémoires touchant l'Establissement d'une Mission chrestienne*, p. 9. I think there can be little doubt that Enciso had heard but an imperfect account of Vespucci's third voyage performed in the service of Portugal, and that he misplaced the land seen from the ships on the 7th of

April, 1502, and generally identified with the island of South Georgia. (*Lettera*, p. 28.) The mistake might have arisen through misunderstanding Vespucci's statement that he coasted 600 leagues from Cape St. Augustine, and in supposing that that distance was to be taken in a direct line; which, adding 600 leagues to 8°—the latitude of C. St. Augustine—would have brought the ships to about 42° S. Further, Enciso or his informant seems to have supposed that at this point was the land which was sighted from the ships. Desbrosses somewhat more accurately says: "The Austral coast discovered by Amerigo Vespucci is to be found marked on the maps nearly at the intersection of the 52nd parallel with the first meridian." (*Histoire*, i., p. 100.) The map of Vaugondy, however, published in the work of Desbrosses, adheres to the older indication of Enciso, and places the *Cap des Terres Australes* in 42° S. The error of Enciso is of interest as the earliest transference of an actual discovery from its proper position to the coast of the legendary *Terra Australis*.

The next instance of a similar kind occurs in the *Novus Orbis*, published in Basle in the year 1532. That work contains a Latin translation of a letter from Lorenzo Cretico, Ambassador of the Venetian Republic at the Court of Portugal, beginning with the words "Serenissime Princeps," and addressed probably to the Doge. It is dated June 27, 1501, but seems not to have been published until 1507, when it appears in the *Paesi nouamente retrouati*. The letter gives an account of the expedition of Cabral to Calicut, in which Brazil was discovered on the 22nd of April 1500, and a passage in it is to the effect that the ships discovered a new country on their way, and lying to the south-west, before reaching the Cape of Good Hope,—"di sopra dal capo d Boâsperâza uerso garbi hano scopto una terra noua la chiamâo d li Papaga." Further, that they called it the Land of Parrots, because these birds there exceeded a cubit and a half in length, and were of various colours; that the writer had seen two of them; the sailors believed that this coast was that of a continent, because they sailed along it for two thousand miles without reaching the end of it; it was inhabited by naked and well-made men. The translator of this letter for the *Novus Orbis* has rendered "uerso garbi" by "lebegio vecti vento," making it to appear that Cabral was driven on this new coast by a south-west wind; and Oronce Finé, whose map of the world of 1531 accompanies

the Basle edition of the *Novus Orbis*, 1532, places a *Brasielie Regio* as part of the *Terra Australis*, reaching nearly to the tropic of Capricorn, whilst more to the east is a *Regio Patalis*, a word supposed by Santarem to be derived from the Sanskrit, and to mean the nether region. The occurrence of the inscription "Mare magellanicum" on Finé's map shows that he was in part influenced by the voyage of Magellan in his delineation of the *Terra Australis*. Mercator followed the incorrect indication given in the *Novus Orbis*, and charted the *Psittacorum Regio* in about 42° S., and with a longitudinal extension from 30° to 70° E. of Bonavista. This tract bears the inscription "Psittacorum Regio sic a Lusitanis hûc libegio vento appulsis cum Callicutum peterent appellata propter earum avium multitudinem. Porro cum hujus terræ littus ad 2000 miliarum prosequuti essent necdum tamen finem invenerunt inde Australem continentem attigisse indubitatum est."

It was probably due in the main to the personal character and ambition of Charles VIII. and Louis XII. that France expended her energies so exclusively in feudal wars at the period of the great oceanic discoveries. With the accession of Francis I. and the regency of Louisa of Savoy commences an awakening of interest in these discoveries, which eventually resulted in active participation. In 1516 the *Paesi nouamente retrouati* appeared in a French translation. In 1523 or 1524 Pigafetta presented to the Regent a copy of his book, that namely which described the voyage of Magellan, and a French abridgment of the work by Jacques Fabre appeared shortly afterwards at the Regent's request. In 1532 Peter Martyr's first three decades were abridged and published in French, with a dedication to Charles Duc d'Angoulême, a son of Francis I.; and abridgments of the fourth decade and of the second and third letter of Cortes were dedicated to another child of Francis I., the Princess Marguerite (the Colines Receuil.) At this time there existed schools of hydrography at Dieppe and Arques, which were patronised by the royal family. A member of the latter, Pierre Desceliers, executed a map of the world in 1546 at the order of Henry II., which is reproduced in the Atlas of Jomard, No. XXI. The same hydrographer produced another mappemonde, bearing the arms of France and Dauphiny, and supposed to be of earlier date than the last-named. It is preserved in the British Museum, and catalogued Add. MS. 5413. This chart is sometimes called the

Dauphin Map, at other times, from its having belonged to Edward Harley, Earl of Oxford, the Harleyan Map, and as the map of 1546 is also known as the Dauphin Map, the other designation is probably the better of the two.

Desceliers and his fellow-hydrographers appear to have had access to some of the pictorial charts of the Spaniards or Portuguese to which Lelewel alludes. An extensive portion of their southern hemisphere is occupied by hydrographic outlines of a continent which in some instances is represented as united with the *Terra Australis*, in others is made separate from it, and to which the name Jave la Grande or Java Maior is applied. Its northern outlines are in part co-terminous with those of Java, in part with those of other islands of the Malayan Archipelago. This appears from the names with which that portion of the coast is studded. But on closer examination one finds that the entire outlines of Java, of certain Malaysian islands, and of Java Major, correspond with the outlines of Central and South America from the Gulf of Honduras to about 23° S. or, in some of the maps (Desceliers, 1550, Desliens, 1566) to the vicinity of La Plata. In order to rectify the bearing of the coast-lines it is necessary to invert them, which can be simply done by placing the chart before a mirror. The inverted outlines should be compared with an early map of America, such as that of Juan de la Cosa. There are indeed some striking points of resemblance between these charts and the map of De la Cosa. De la Cosa represents two large islands and some small ones off Cape St. Augustine; the French charts have one large island and some small ones in the same position. These islands may represent the discovery of Cabral, who at first regarded Monte Pascoal as part of an island. (*Geo. du Moyen Age*, ii., p. 110.) Another point of resemblance is in the delineation of the mouths of the Tocantins and Amazon and the island Marajo. In both cases that island is represented as a peninsula between two gulfs, and the two coast-lines at this point are strikingly similar. Again, in De la Cosa's map the river which disembogues a little to the south of Cape St. Roque is produced so as almost to cut off the north-eastern corner of Brazil; in the French maps it cuts it off completely.

I will now point out some details which I think will be held sufficient to establish the identity between Jave la Grande and the American coasts I have mentioned. The

bay marked "Baye Perdue" has to the N.W. of it a small island marked "Ye de S. Xtofer," or Island of St. Christopher (commonly known as St. Kitts), and the bay itself corresponds with the description given by Vespucci of "a very fine port, which was formed by a large island that was situated at the mouth, inside of which there was a bay, very deeply indented" (*Lettera*, p. 18; in this bay he anchored in his second voyage, in the summer of 1499. The description applies either to the Gulf of Paria or to the mouth of the Orinoco; and that Baye Perdue is intended for one of these places is evident from its position relatively to St. Kitts. If "Perdue" is a translation of the Spanish "Perdita," the name may have been given it after the loss of two of the ships of Vincente Pinzon in that neighbourhood in the year 1500. The islands off the coast to the west of Baye Perdue represent very fairly the Leeward Islands, and one might without difficulty pick out Margarita, Tortuga, and Curaçoa; whilst some of the headlands are probably represented as islands. The Gulf of Venezuela is not drawn as such, but, at the place where we should expect to find it, are several islands representing the peninsulas of Paraguana and La Guajira. We may conclude that the pilot who drew the original chart (like the pilot who drew the original charts from which the *Hydrographia* of 1513 was constructed) sailed past the entrance of this gulf without detecting it. Another West Indian island serves as an index to this part of the coast, under the name "Ye de Lucayos." This name appears on De la Cosa's map in the singular, "Lucayo," apparently as the equivalent of Guanahani, and it is elsewhere used in the plural of the Bahamas generally. The coast then trends S.W. into the Gulf of Darien; and on this part appears on the chart of Desliens the word "forillons," an adaptation of the Spanish "farallones," or reefs above water. The "Farallones" of the Gulf of Darien are referred to by Galvano (Hakluyt Soc. Ed., p. 99), who speaks of them as being sighted by Rodrigo Bastidas in his voyage of the year 1503, but mentions them as if well known prior to that time.

At the extremity of the Gulf of Darien the coast-line of the MS. charts ceases to correspond with the actual coast. The explanation, I think, is to be found in supposing that the navigator who drew the chart left the coast at this point, crossed the mouth of the Mosquito Gulf, and resumed his hydrographical labours where he again sighted the coast—

that of Nicaragua,—some distance to the south of C. Gracias a Dios. At this point another of the West Indian Islands assists our identification. N.N.E. from the promontory which we have supposed to be C. Gracias a Dios—"C. da fremosa" on the Harleyan Map—lies the island of Jamaica, "Ysla [illegible] Jamaqua." Its true position would be N.E., but it is accurately enough placed relatively to "C. da fremosa" to indicate that the cape is C. Gracias a Dios and not P. Manzanilla nor C. Catoche, the only other capes with which one might attempt to identify it. As for the spelling of Jamaica, that varies much in old maps and treatises. The *Hydrographia* has "Jamaiqua," Galvano writes it "Zamayca." From this point the orientation is entirely false, for the coast, instead of being produced nearly due west, slopes off to the S.W. and produces the impression of a coast-line accurately enough depicted as to hydrographical features, but so depicted by a mariner without a compass.

Let us now return to the point whence we started, and proceed southwards. South of the N.E. corner of the map is a river with the much-abbreviated legend, "R. de St. Po;" perhaps San Pedro, for in the *Mappemonde peinte par ordre de Henri II.*, it is translated St. Pierre; its position accords with that of the Rio San Francisco. Then we have an unnamed bay, and the outlet of a river marked "R. Grande," answering to Bahia dos Todos Santos and the R. Paraguaçu or "great water," of which Rio Grande might be a translation. Desceliers delineates a channel from this bay to the mouth of the Tocantins, and thus converts the N.E. corner of South America into an island. No such separation, however, occurs on the Mappemonde of Desliens, which is otherwise similar to the Harleyan Map; perhaps Desceliers has taken a liberty with his original, in order to reconcile his idea of the identity of the north-western portion of the chart with the island of Java, a circumstance to which I shall again refer. The next bay, marked "Baye bresill," is probably the "porto seguro" of Cabral. The name Brazil, which is stated to have been bestowed by French sailors, was very soon adopted by the Portuguese, for we find a "Rio Brazil" in the *Hydrographia* in a position coinciding with this "Baye bresill." The undue extension given to the harbours of this coast is a noticeable feature; and although one might reasonably expect that the ports in which ships anchored would be shown more in detail

than places which were merely sailed past, I think this consideration alone is hardly sufficient to account for the exaggeration, but that this southern portion is the work of a less skilled draughtsman than the northern—of one who had not sufficient knowledge of cartography to reduce his plans of the harbours to their proper relative proportions on a chart of the entire coast.

The indications for the guidance of mariners which occur at various points of the coast sufficiently attest the hydrographic character of the original charts; and the illustrations are an evident addition of the copyist, and are as characteristic of the systematic mediæval map of the world as the nautical information is characteristic of the pilot's chart. Amongst these nautical indications are "terre unnegeade," submerged land (Desceliers, 1546); "ap quieta," perhaps, a a calm place (*Idem*); "Roches," rocks, (1546, 1550); "Arenes," sands, (1550); "Ansses," cores, (1546). One can only guess at the meaning of some of the inscriptions to the south of "Baye bresill." "B. de gao" may be a corruption of "agoada," watering-place; "C. de St. drao" of "Cabo do san padrâo," Cape of the Holy Cross, (Harleyan Map). The last, if such be the interpretation of it, either marks the spot where a Padrâo was set up, or is the vulgarisation of the "Caput Sancte Crucis" of the *Hydrographia* and the map of Ruysch—a general rather than a specific appellation, coinciding with the name of the country, Terra Sanctae Crucis. The next noticeable name is that of the deep harbour marked "Hame" or "Havre des Yles," for so I conceive we must read "Hame de Sylla," the copyist converting the words "de las Ylhas" into "de Sylla." Probably the legend "ye de Saill" is a corruption of the same sort. This harbour of islands corresponds to Rio de Janeiro, a little to the south of which the coast-line in the Harleyan Map ceases to present any distinct geographical features. On a map of 1550, however, the features are still depicted, and the last to be observed is the "Baye des Rivieres," in the position of Rio Grande or Sao Piedro do Sul.

An acquaintance with these charts of America was not confined to the French school of cartography, for the same outlines are to be found in a map by Cornelis de Jode, entitled *Hemispheriú ab aequinoctiali linea ad circulú poli ártarctici*, published in his *Speculum Orbis*, Antwerp, 1593. De Jode's adaptation differs in several striking particulars from that of the French. The adapted American outlines

of De Jode occupy a similar position in his scheme of the globe to the same outlines in the scheme of the Dieppe school. They bear the name *Ter. australis incognita*. There is no dividing strait corresponding to that which divides Jave la Grande from Java; Java maior is in its proper place as the island of Java; the other islands of the Archipelago which the French school unites with Jave la Grande are not so united by De Jode, but are located elsewhere; and the eastern coast is produced further to the south than in any of the French MS. charts, and terminates with the inscription "Estrecho de Magellanes." The most remarkable difference, however, is that De Jode's outlines are not inverted, but are turned round an angle of 45°, so that the north coast of South America becomes the west coast of the *Ter. australis incognita*. Moreover, the country is not hydrographically outlined, but is delineated so as to harmonise with the continental character of the atlas. Its name and description are engraved on the so-called *Ter. australis incognita*, as follows:—"Maxima et admiranda insula occidentalis America, nunc quarta pars orbis nominata: ditissima fertilissimaq; omniû rerû ad vitâ necessariarû. Veteribus philosophis, cosmographis, et potentissimis Monarchis ignota et primû imperante Carolo V. perlustrata. In his peninsulis et isthmo, sunt maxime temporû et rerû variationes: quoniâ subiacent incoli 4 zonis, una frigida est, altera torrida, tertia et quarta temperata." I think we find in this inscription a confirmation of the opinion, tenable on other grounds, that the original charts were Spanish, as the Portuguese receive no share of the honour of the discovery of America. The legend bears internal evidence of the influence of Johann Schoener, who, in his *Luculentissima quaedâ terrae totius descriptio* (Norimbergae, 1515), describes the New World under the name "America," and speaks of it as "quarta orbis pars," and "insula mirae magnitudinis"—an opinion which he subsequently renounced in favour of the theory that America was united to Asia, citing, strangely enough, the discoveries of Magellan as a proof:—"Modo vero per novissimas navigationes factas anno 1519, per Magellanum versus Moluccas insulas in supremo oriente positas eam terram invenerunt continentem superioris Indiae quae pars est Asiae." (*Opusculum Geographicum*, Norimbergae, 1533, ii., 1 and 20.)

The "America" of De Jode bears few inscriptions, but some of them are significant; such as "R. S. Augustin,"

nearly in the position of the cape of that name, and corresponding to the Rio S. Augustino of the *Hydrographia*; and in the extreme south, "Estrecho de Magellanes." This record of Magellan's voyage proves that the original of this map of De Jode was compiled not earlier than 1522, and the facts just mentioned regarding the opinions of Schoener seem to indicate a German, perhaps Schoener himself, as its compositor. An account of Magellan's voyage reduced from Pigafetta's relation to the Emperor was sent by Maximilian of Transylvania to Cardinal Lang, Archbishop of Salzburg, then attending the Reichstag in Nürnberg, in November, 1522; and the map or maps from which the one we are considering was derived may have accompanied and illustrated Maximilian's letter, and been handed over to the learned Schoener for his inspection and use, accompanied by the necessary directions which would enable him to rectify the bearings.

In his address, "Inspectori" (1569), Mercator tells us that for the purpose of delineating with exactitude the various countries, he compared the nautical charts of the Spaniards and Portuguese one with another, and also with most of the printed and manuscript accounts of the voyages. Ortelius acted as collector of materials, Mercator as elaborator, and the former in his travels through the Netherlands, Germany, Italy, and Great Britain, probably procured the charts to which Mercator refers, including those used in his construction of the *Terra Australis*. Gerard de Jode, the father of Cornelis, worked at one time in company with Ortelius, and may have had access to his collection, for there was an excellent understanding between the various members of the Antwerp school. It is not so easy to conjecture how the Spanish charts passed into the possession of French cartographers: certainly in a different manner, since they appear in so different a guise. When Pigafetta visited France after his return from the circumnavigation of the globe, Giovanni Vespucci, nephew of Amerigo, held the position of Piloto-Maior, and as such would be custodian of the original charts. He seems to have been lax in his duties, for he is said to have published a map of America in 1524, for which action he was dismissed from office. Further, he inherited all his uncle's charts and papers. From him Pigafetta may have improperly obtained copies of American charts, and conveyed them with him to France. Maximilianus Transylvanus may have done the same, and sent copies to

the Cardinal Archbishop of Salzburg. The coasts delineated in the Harleyan Map correspond very closely with the coasts visited by Vespucci in his second and third voyages, but we have adduced reasons for believing that the southern portion, at least, was the work of a less skilled hydrographer than Vespucci. Not a few pilots were employed, first by the Portuguese, then by the Spaniards, or *vice versâ*, and some of them even returned from their second masters to their first: this greatly complicates the problem of the nationality of the original explorer.

I have noted one or two points of resemblance between the French MS. charts and that of Juan de la Cosa; and that pilot may have been the author of the northern portion of the chart, from the vicinity of Cape St. Roque westwards. The West Indian Islands included in the chart may have been touched at in the outward or homeward voyage of the hydrographer, and were well known to Juan de la Cosa from his connection with Columbus. In Alonzo d'Hojeda's voyage with De la Cosa as his pilot, from May, 1499 to June, 1500, the ship of the commander was wrecked, and d'Hojeda reached San Domingo in a small boat on the 5th September, 1499. As the outward voyage from Cadiz to the American coast only occupied 42 days, it is possible that d'Hojeda may have reached the Bay of Honduras, been there wrecked, and afterwards reached San Domingo, all between 27th June and 5th September. If the portion of the chart in question does emanate from De la Cosa the shipwreck (and probable loss of compass) might account for the inaccuracy in the direction given to the coast of Honduras.

The illustrations with which the Dauphin and the other MS. maps are enriched are an addition of the colourist; for such illustrations are never present in simple hydrographic charts. Moreover the illustrations in some of them, as in that of Desceliers of 1550, do not in all cases refer to the countries where they occur, but to quite other parts of the world. It is very doubtful whether the illustrations were copied from original drawings at all; those of Desceliers (1550), for example, are mere figments of the artist's brain based upon the tales of travellers. Such are the group of dog-headed beings representing the inhabitants of Angania or the Andaman Islands, according with the account of Marco Polo (ed. Panthier, cap. clxvii.); whilst the group of sun and ox worshippers represents the cults ascribed to the

Javanese by Varthema (Travels, Hakluyt Soc., 1863, pp. 251–2). The illustrations of the Harleyan Map are sufficiently real to be based upon the descriptions by Vespucci and Pigafetta of what they saw in Central and South America. Vespucci mentions pigs and deer amongst the animals he saw in his first voyage (*Lettera delle isole*, p. 14); the natives are said to be naked and to deprive their bodies of all hair except that on the head; they carried bows and arrows, clubs and spears, hardened in the fire (p. 5); they had their meat in earthen basins or in the halves of pumpkins (p. 6), which are represented in two places on the Jave la Grande of the Harleyan Map; their houses were made like huts or cabins (capanne) of very large trees covered with palm-leaves, and in some places of so great length and breadth that in one single house dwelt six hundred persons (p. 7). In the second voyage, Vespucci observed on the island supposed to be Margarita, that the inhabitants dwelt underneath arbours, which protected them from the sun but not from the rain (p. 21)—a rude shelter such as is depicted on the Harleyan Map, which also represents the palm-trees. In his description of the country and inhabitants of Verzin or Brazil, Pigafetta accords with Vespucci in certain particulars. They have (pigs which have their navel on the back) (*Voyage of Magellan*, Hakluyt Soc., p. 46); the men wear no beard, because they pluck it out (p. 45); their dwellings are long houses, in each of which there dwells a hundred persons (p. 44). The Patagonians who were encountered in Port S. Julian had low huts or tents made of the skins of the guanaco and removed their huts from place to place. These huts may be intended by the conical structures of Desceliers. The object most characteristic of South America is the guanaco, for such seems to be intended by the camel-like animal that appears on some of these maps. As drawn by Desceliers in 1550 it is very much of a monster, and might well have been conceived after the description of Pigafetta:—"This beast has the head and ears of the size of a mule, and the neck and body of the fashion of a camel, the legs of a deer and the tail like that of a horse, and it neighs like a horse." (*Voyage of Magellan*, p. 50.) And further on Piggafetta relates that the natives tamed this animal and led it with a cord, as we find represented by Desceliers. The juxtaposition of these South American subjects with the outlines of South America may be fortuitous. Jave la Grande offered ample

scope for the purpose of illustrations, and may have been merely selected as a convenient blank space in which to place them, their appropriate position being more or less conjectural. At the same time our suggestion about Pigafetta's possible share in the dissemination of these charts is upheld by the agreement between his written descriptions and the illuminations on the Harleyan Map.

The dates of the mappemondes of Desliens, 1566, and of Jean Cossin, 1570, overlap that of Gerardus Mercator's *Nova et aucta terrae descriptio*, the engraving of which was finished at Duisburg in August, 1569. The distinguishing feature in this map was the new projection devised by the engraver, which develops the degrees of latitude in a ratio proportional with the increase in the degrees of longitude. Mercator himself said that his projection lacked mathematical justification, but that it was the only method by which the sphere could be reduced to a plane projection, and that it would be convenient for navigators. The navigators, however, were slow to avail themselves of new and untried methods, and despised a map which displayed coasts that were unknown to them, and which subordinated nautical details to a theoretical *tout ensemble*. Mercator had very clear and definite views on the subject of a southern continent. His biographer, Gualterus Gymniis, says that he divided the world into three continents, one of which consisted of Asia, Africa, and Europe, the other was India Nova or Occidentalis, or America, and of the third, although he was not ignorant of the fact that it was still unknown, yet he affirmed that he could demonstrate the existence by solid reasons, and that it was not inferior to the other two in size and weight, for, if it were, the globe could not remain stable with respect to its equilibrium. (*Gymniis, Vita Mercatoris.*) If we turn to the map of 1569 for the representation of this theory, (traceable also in his world-map of 1538) we find the whole Southern Ocean awanting and its place approximately occupied by a southern continent. Beginning from the Terra del Fuego, which is made a part of it, the *Terra Australis* extends in a north-westerly direction towards New Guinea, with which it forms a strait, then trends S.W., W., and N., so forming a gulf in which lie the islands of Java Minor and Petan, followed by a promontory inscribed with the names Maletur, Lucach, and Beach, a corrupted form of Lucach. I have explained how these names, occurring in the Book of Marco Polo, were

erroneously placed to the south of Java. But the promontary on which they occur, the adjacent gulf to the east of it, aud the coast-line thence to the Straits of Magellan, show another influence—the same influence that produced the Java Maior of the Dieppe school of hydrography. To the west of the northern promontory is another gulf. Then follows the *Terra Psittacorum*, lying nearly due east and west in about 44° S.; then the *Promontorium Terræ Australis* of Enciso in 42° S. and 15° E. from Boavista. From this cape the coast-line trends southwards to rejoin the Terra del Fuego.

An element unknown to the French cartographers occurs in this conception, namely, Tierra del Fuego, and its conjunction with the *Terra Australis*. There was an old theory that a strait divided the continent of South America and connected the Atlantic and Pacific Oceans, and when De Solis discovered the mouth of La Plata it was believed that he had discovered the entrance to this strait. (Pigafetta, *Voyage of Magellan*, p. 48.) The same theory is upheld by Schoener on his globe of 1520, in which the strait is placed in about 45° S., and is made to divide the *Terra Nova* from another continent named *Brasilia Inferior*. The Genoese pilot who recounts the voyage tells us that Magellan successively entered the Rio de la Plata and the Bay of St. Matthias, in the expectation of finding an entrance to the strait. And when the strait was actually found, it was assumed that the land which lay to the south of it was a part of the *Terra Australis*. An inscription on a map entitled *Brasilia et Peruvia* in the *Speculum Orbis* shows how confused were the ideas of geographers on the subject of the *Terra Australis;* it runs:—"Chaesdia seu Australis Terra quam nautarum vulgus Tierra di Fuego vocant alii Psittacorum Terram." This error was not removed until Drake, in his voyage round the world, was driven to fully 57° S. in September, 1578, when he found that the two oceans united, and that islands only lay to the south of Magellan's Strait. The assumed continuity of the Tierra del Fuego with the *Terra Australis* would induce the ascription of the discovery of the latter to Magellan. This was done by Mercator, Ortelius, and others, for they inscribe on their *Terra Australis* the words:—"Hanc continentem australem nonulli Magellanicam regionem ab ejus inventore nuncupant."

The Terra del Fuego of Mercator and Ortelius is perhaps a misplaced portion of the mainland of America. At least

there is a coincidence of nomenclature suggestive of some such misplacement. A Cabo Deseado, correctly placed at the western entrance of the straits, is also to be found on the *Hydrographie Portugaise* near the Gulf of Paria; Golfo di San Sebastiano has a synonym in the Porto de San Sebastiano applied to Rio de Janeiro by Diego Ribero (1527) and the author of the *Hydrographie*.

Let me recapitulate. The *Terra Australis* of Mercator consists of the following elements:—

(1.) The outline from about 130° E. of Boavista to Cabo di bon Signale in 290° E. This portion includes Nova Guinea, and corresponds with the *Ter. australis incognita* of Cornelis de Jode and the Jave la Grande of the French MS. charts. It is based upon charts of America from the Gulf of Honduras to the Straits of Magellan.

(2.) The outline from C. di bon Signale to Ysole do Cressalina and Golfo di San Sebastiano; possibly another misplaced portion of the American continent.

(3.) The outline from Golfo di San Sebastiano to the Promontorium Terræ Australis; in part purely conjectural, in part representing Vespucci's discovery of land beyond 52° S.

(4.) The outline from the *Promontorium Terrae Australis* to the point of commencement; in part representing Cabral's discovery of Brazil under the name *Terra Psittacorum*, in part purely conjectural.

The results of the whole investigation may be thus summarised:—The theory of an antipodal continent arose as a consequence of a belief in the sphericity of the earth. It was strengthened by the conceptions of Marinus and Ptolemy regarding the configuration of the African continent, and in this aspect held a place in the system of the Arabs. After a long lapse of time, during which geography was not a science but a body of dogmas, the theory was revived amongst European geographers, [redacted], in consequence of the new discoveries of the 16th century; and these were erroneously located in a position analogous to that previously assigned to the antipodal continent. This is to be first observed on maps ascribed to Leonardo da Vinci about 1514, on a mappemonde by La Salle, in *La Salade nouvellement imprimée*, 1522, and, with evident reference to American discovery, in the Mappemonde of Finé, 1531. Mercator finally formulates the theory in 1569, having previously indicated

his opinions in his map of the world of 1538 in the words placed on the Antarctic continent to the south of Magellan's Straits:—"Terras huc esse certum est, sed quantas quibusq; limitibus finitas incertum." The theory thus propounded receives sanction from many quarters, especially from the Memorials of De Quiros and of Jean Paulmier.

Here I must close this investigation for the present. If any proof were required of the complete absence of all connection between the theory of a *Terra Australis* and the geographical fact of the Australian continent, it would surely be found herein—that the belief in the former persisted for a hundred years after Australia was visited and mapped by Dutch navigators. And yet to this day a confusion exists between these distinct phenomena, which blurs the outlines of early Australian history. That history may be compared to the history of three streams which have their source in an unknown and half mythical country. There is the stream of Portuguese ascendancy in the East. That stream undergoes changes in the end of the sixteenth century, and from being Portuguese becomes first Spanish then Dutch. Then there is the stream of Spanish conquest passing through Spanish America. A Cortes saw it flow, unwitting whither it went, a De Quiros sailed over its waters, but they bore him to no certain haven. Lastly, there was the French stream, romantic in its origin and flow, its waters liberated at the touch of a native of the mythical land, disclosed to the world's view by his descendant after three generations of silence, and only disappearing, late in time, on the borderland of English enterprise and colonisation. To trace the course of these parent streams, and to discriminate them from their tributary waters is the task of the man who would map out the various origins of the history of Australia.

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